AMERICAN WELDQUIP

SERVICE QUALITY SOLUTIONS

RCS-1000

ROBOTIC NOZZLE CLEANING STATION

WC-1000

WIRE CUTTER

MADE IN U.S.A PRODUCT

INSTALLATION, OPERATIONS AND REPLACEMENT PARTS MANUAL

SERVICE QUALITY SOLUTIONS

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INTRODUCTION

Thank you for purchasing an American Weldquip product. The American Weldquip product you have purchased has been carefully manufactured, assembled and fully tested. This manual contains information on the installation, operation, maintenance and replacement part breakdown. Please read, understand and follow all safety instructions, warnings and procedures. Keep this manual handy for referencing installation, operation, maintenance and part ordering information. While every precaution has been taken as to the accuracy in this manual, American Weldquip, Inc. assumes no responsibility for errors or omissions. American Weldquip, Inc. assumes no liability for damages resulting from the use of the information contained in this manual. American Weldquip, Inc. shall have no liability to the buyer for consequential damages or expenses by any defect whatsoever.

WARRANTY

AMERICAN WELDQUIP MIG guns and parts are warranted to be free of defects in material and/or workmanship for the period of time listed below. For any product found to be defective under normal use, AMERICAN WELDQUIP, INC. at our option, will repair, replace or issue a credit for the value of the defective product. All warranty claims must be submitted by the original purchaser. Use of non-genuine AMERICAN WELDQUIP parts and/or consumables may damage and/or severely limit the performance of the equipment which may limit or void any warranties. AMERICAN WELDQUIP, INC. will not assume responsibility for incidental damages or expenses related to any defect. This warranty does not cover damage caused by misuse or abuse, accident, alteration of product, improper installation, misapplication, lack of reasonable care and maintenance, unauthorized repairs or modifications, loss of use while at a repair facility or other conditions that are beyond the control of American Weldquip, Inc.

A Return Authorization Number (RA#) must be attained from the factory for any product being returned for Warranty Repair or Replacement. All returned product must be shipped freight prepaid by the sender. No- charge replacements, repaired products, or credit will be issued, once the returned product has been evaluated and warranty condition has been verified. If an immediate replacement is required before proper warranty evaluation, a purchase order number is required and the goods will be invoiced. A credit will be issued once it is determined that a warranty condition exists.

STANDARD WARRANTY

All Semi-Automatic, Automatic, Robotic MIG TORCHES and Components	= 120 Days
MIG Torch Trigger Switches (Contacts only) -Excludes Smoke Extraction	= LIFETIME
Robotic Nozzle Cleaning Stations, Wire Cutter	= 90 Days
Robotic Peripherals, ArcSafe, Gun Mounts	= 90 Days
TIG POINT Tungsten Electrode Grinders	= 90 Days

LIMITED EXTENDED WARRANTY PROTECTION

This limited extended warranty protection expands coverage to loyal customers who use all GENUINE American Weldquip

consumables. Customers filing a claim under the extended warranty will need to prove, by providing past invoices, that they have been purchasing and using Genuine American Weldquip consumables.

All Semi-Automatic, Automatic, Robotic MIG TORCHES and Components	= 1 YEAR
MIG Torch Trigger Switches (Contacts only) -Excludes Smoke Extraction	= LIFETIME
MIG Torch Handles	= LIFETIME
Robotic Nozzle Cleaning Stations, Wire Cutter	= 90 Days
Robotic Peripherals, ArcSafe, Gun Mounts	= 90 Days
TIG POINT Tungsten Electrode Grinders	= 90 Days

ROHS COMPLIANT

RoHS (Restriction of Hazardous Substances) is an environmental law which addresses the European Union directive 2002/95/EC known as the RoHS Directive. The RoHS directive restricts the use of hazardous substances listed below in electrical and electronic equipment. While it is not a requirement to meet the directive in the United States, at this time, American Weldquip Inc. feels this is an important part of our "Go Green initiative. We have taken all reasonable steps to try to insure the supporting evidence regarding the absence of the restricted substances to support RoHS compliance.

For reference, the maximum concentration values of the restricted substances by weight in homogenous materials are:

Lead/Lead Components	- 0.1%
Mercury	- 0.1%
Hexavalent Chromium	- 0.1%
Polybrominated Biphenyls (PBBs)	- 0.1%
Polybrominated Diphenyl Ethers (PBDEs)	- 0.1%
Cadmium	-0.01%

For RoHS Certification of Compliance Letter on a particular product please visit our website – www.weldquip.com or email us at technical@weldquip.com or call 330-239-0317.

RCS-1000 ROBOTIC NOZZLE CLEANING STATION

SPECIFICATIONS

Air Requirements – 80-120 PSI @ 8 S.C.F.M(Min) Clean Shop Air
Reamer Stroke – 2" (50.8mm)
Dimensions – 6 ½"(165.1mm) x 6"(152.4mm) x 12"(304.8mm)
Weight – RCS-1000 - 27Lbs (12.247Kg)
RCS-1000/WC-1000 –31 Lbs. (14.061Kg)
Electrical
(3) Robot Outputs and (1) Robot Input Required
Output: 0VDC Switchable Ground
Output: 24 VDC Continuous Supply
Input: 24 VDC Signal Return
NOTE: RCS-1000 IS SHIPPED FOR "SINKING" LOGIC FROM THE FACTORY

INSTALLATION AND SETUP

Mounting

Mount the nozzle cleaning station in a convenient location within easy access of the robot. Make sure to take into consideration movable fixtures and other confines within the robotic cell. For proper operation the reamer must be mounted on a solid, vibration free stand or mount. Mounting dimensions are shown below.

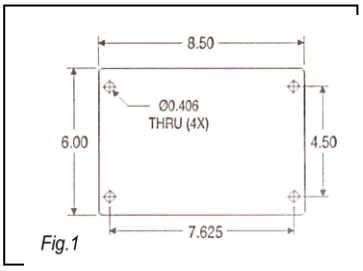


Fig.1

Electrical

WARNING: The following electrical connections should only be performed by a qualified technician. Damage to equipment will occur if connections are incorrect.

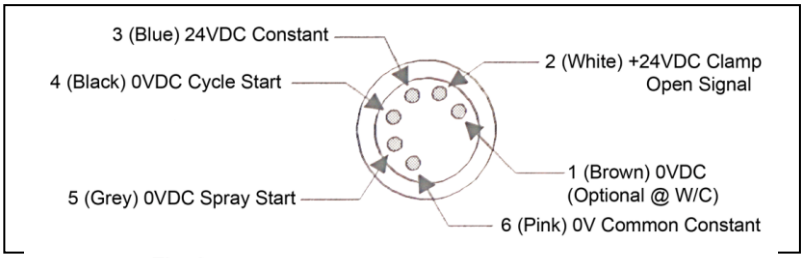
Connection #1 (Brown Lead) – Optional Wire Cutter 0 VDC Cycle Start – connect to a robot output capable of supplying a timed "GROUND". This ground pulse determines the length of cutting Time(0.5 Secs.)

Connection #2 (White Lead) - +24VDC Clamp Open Signal – connect to a robot input receiving a +24 VDC signal from the nozzle cleaning station. This "Cycle Status Signal" informs the robot that the nozzle clamp is open and robot is free to move.

Connection #3 (Blue Lead) – Continuous 24 VDC – connect to a robot output capable of supply a continuous 24VDC to the reamer.

Connection #4 (Black Lead) – Reaming 0 VDC Cycle Start – connect to a robot output capable of supplying a timed "GROUND". This ground pulse determines the length of reaming time.

Connection #5 (Grey Lead) – Spray 0 VDC Spray Start – connect to a robot output capable of supplying a timed "GROUND". This ground determines the length of spray time.


3 (Blue) 24VDC Constant
4 (Black) 0VDC Cycle Start
5 (Grey) 0VDC Spray Start
2 (White) +24VDC Clamp Open Signal
1 (Brown) 0VDC (Optional @ W/C)
6 (Pink) 0V Common Constant
Fig. 2

NOTE: WIRING SHOWN FOR STANDARD "SINKING" LOGIC

Air Supply

The RCS-1000 nozzle cleaning station requires 80-120 psi @ 8 S.C.F.M (5.0-7.0 BAR @ 450 LPM) of clean shop air minimum for proper operation. The unit is equipped with a ¼" NPT female fitting for the air supply connection. It is Important to use a supply line with at least 3/8" ID to insure proper air volume to the reamer.

Reamer Tooling

Choose the appropriate size reamer blade for your welding application and welding nozzle I.D. (See page 8 for available sizes). To remove/install reamer blade use a 14mm wrench to hold the top of the air motor shaft from turning. Using a 17mm wrench turn reamer blade counter-clockwise to remove or clockwise to install. Considerable force may be necessary to remove the reamer blade as the blade is designed to self-tighten during operation.

Nozzle Alignment/Nozzle Clamp Adjustment

CAUTION: Use caution to avoid possible interference with the reamer to the robot torch head or nozzle components when setting this adjustment. ALWAYS use extreme caution to avoid any pinch or crush point between the robot and the reamer and/or between the clamping mechanism, torch and the reamer blade. Failure to heed warnings can results in serious bodily harm.

Correct alignment of the welding nozzle is critical to the proper operation of the RCS-1000.

1) Nozzle OD Adjustment – The clamping V-Block must be adjusted according to the nozzle outside diameter so as to center the nozzle above the reamer when the clamp is closed. The V-Block is adjusted by turning the set screw behind the V-Block in or out as shown in Fig 3.
2) Side to Side Alignment – The side to side alignment with respect to reamer is set at the factory and normally does not require adjustment. If realignment becomes necessary, the entire clamping unit can be moved from side to side by loosening the (4) button head screws on the top of the unit as shown in Fig 3.
3) Insertion Depth – Insertion depth of the nozzle in relation to the reamer blade is controlled by robot placement. Depth adjustment should be made by the robot torch operator/programmer. It may be possible on 5/8 bore nozzles and larger to reamer past the gas holes on the diffuser. This will depend on the ID of the reamer blade, OD of the diffuser and length of the reamer blade. Normally it is recommended to only ream the nozzle the length of the contact tip. Use caution when trying to ream past the length of the contact tip on larger bore nozzles

Anti-Spatter

Anti-Spatter solution is added to the unit by removing the fill cap on top of the bottle. The bottle capacity is approximately one (1) quart.

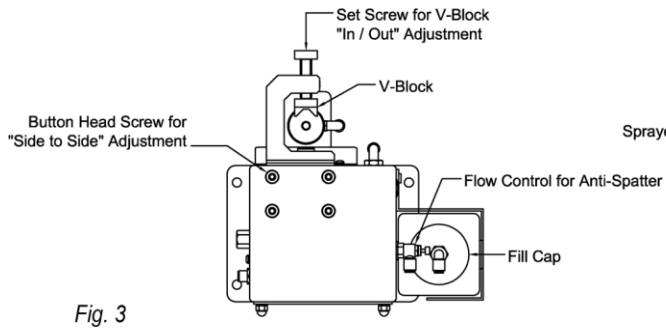


Fig. 3

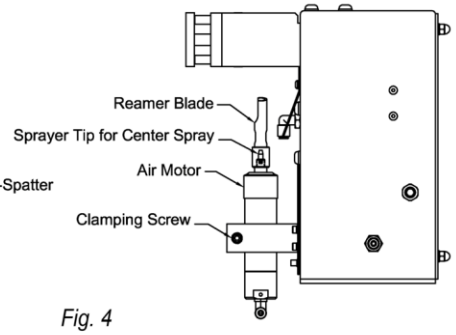


Fig. 4

OPERATION

Robot Programming/Reamer Function

The cycle time for nozzle cleaning is controlled by the robot program.

1) With the ground "ON" on Connection #4(See Fig 2), the clamp secures the welding nozzle in place, the blade begins to rotate and the reamer spindle shaft starts its upward travel.
2) With the ground still applied, the reamer reaches the top of its stroke and remains there as long as the ground is "ON".
3) After the reaming cycle is completed program to turn the ground "OFF". The reamer will then begin its downward travel, continuing to rotate with the clamps still closed. Upon reaching the bottom of its stroke (HOME position), the blade will stop rotating and the clamp will open.
4) Connection #2 is a "Cycle Status" which informs the robot of the clamping status. When the clamp is open the robot will receive a 24VDC signal. The robot is now able to return to welding. NOTE: When the clamp is closed during the cleaning cycle Connection #2 will read 0VDC. The robot program should not be allowed any robot movements when Connection #2 is at 0VDC.

Robot Programming/Spray Function

The cycle time for the Spray function is controlled by the robot program.

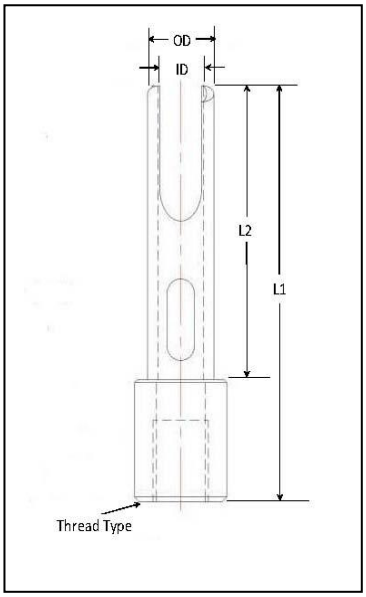
1) The robot should be programmed by Connection #5 to spray after the reaming process while held in the clamp. With the ground "ON" (Fig. 2) the sprayer will dispense anti-spatter solution until the ground is turned "OFF". Spray time should be determined by the robot operator/programmer.
2) The amount of anti-spatter delivered is controlled in two ways.
   a) The length of time that Connection #5 is activated to ground "ON".
   b) Adjustment of the flow control valve located on the side of the unit directly above the anti-spatter bottle.
3) Usual recommended spray time is .2 seconds to 1 second depending on the anti-spatter compound. Avoid over saturating the nozzle.

Feed Rate Adjustment

The feed rate "UP" and/or "DOWN can be controlled by adjusting the flow control valve located inside the unit. Remove the rear cover for access to the valves. The top valve controls the speed in the "UP" direction. The bottom valve controls the speed in the "DOWN" direction.

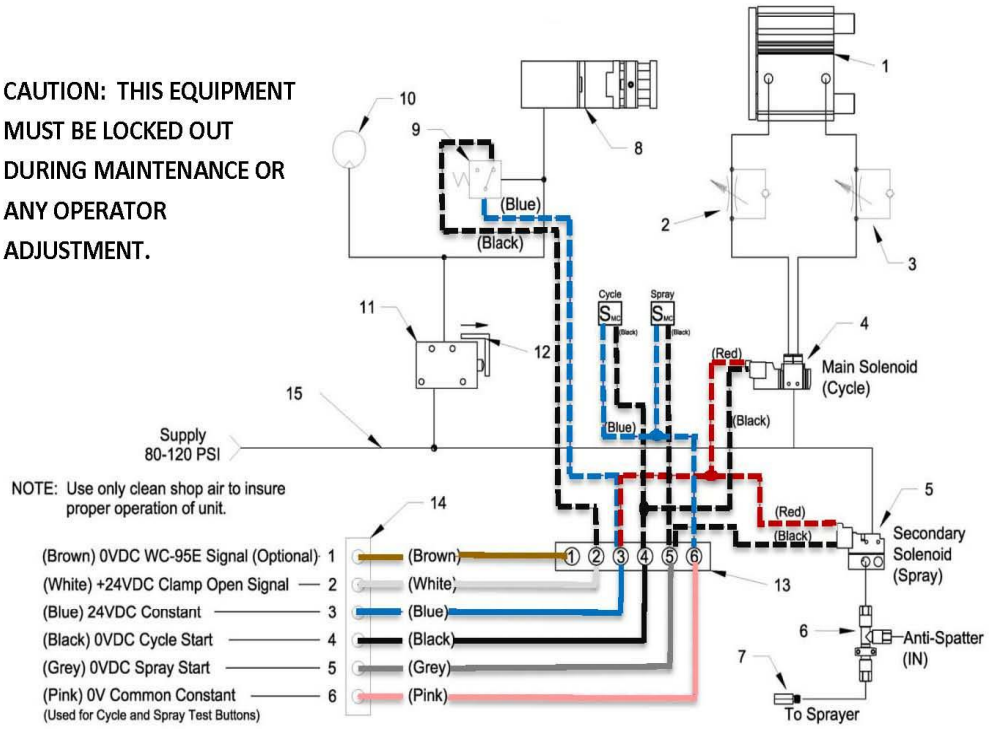
REAMER BLADE SELECTION CHART

PART #	NOZZLE BORE SIZE	OD	ID	L1	L2	THREAD TYPE
RB500	1/2" (13mm)	.490" (12.5mm)	.374" (9.5mm)	2.56" (44.7mm)	1.76" (44.7mm)	Female – 3/8-24
RB560	9/16" (15mm)	.555" (14mm)	.435" (11mm)	2.56" (65mm)	1.76" (44.7mm)	Female – 3/8-24
RB625	5/8" (16mm)	.610" (15.5mm)	.511" (13mm)	2.69" (68mm)	2.14" (54mm)	Female – 3/8-24
RB625-01	5/8" (16mm)	.610" (15.5mm)	.453" (11.5mm)	2.56" (65mm)	1.76" (44.7mm)	Female – 3/8-24
RB625-02	5/8" (16mm)	.610" (15.5mm)	.511" (13mm)	2.95" (75mm)	2.10" (54mm)	Female – 3/8-24
RB625-03	5/8" (16mm)	.590" (15mm)	.433" (11mm)	2.56" (65mm)	1.76" (44.7mm)	Female – 3/8-24



Other Reamer Blades Available Upon Request

CAUTION: THIS EQUIPMENT MUST BE LOCKED OUT DURING MAINTENANCE OR ANY OPERATOR ADJUSTMENT.



NOTE: WIRING SHOWN FOR STANDARD **"SINKING"** LOGIC.

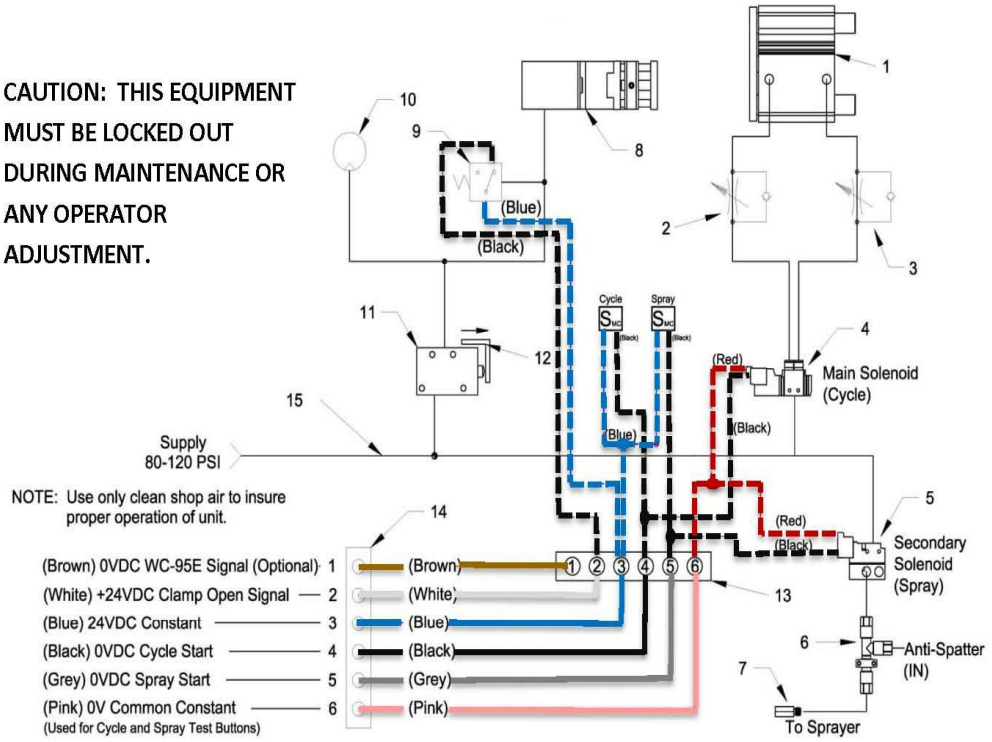
#	DESCRIPTION	#	DESCRIPTION
1	Lift Cylinder	9	Pressure Switch
2	Speed Control Valve – DOWN	10	Pneumatic Motor
3	Speed Control Valve – UP	11	Mechanical Valve
4	Solenoid Valve 24VDC - Cycle	12	Valve Bracket
5	Solenoid Valve 24VDC – Spray	13	Terminal Block
6	Venturi Valve	14	Plug
7	Spray Tip	15	Air Supply Lines
8	Clamp Block Assembly		

REAMER FUNCTION		
OPERATION SEQUENCE	**VALVE ACTION**	**CYCLE STATUS**
Ground "OFF" - #4	Valve 11 "ON"	Reamer Off, Clamp Open
Ground "ON" - #4	Valve 4 "ON"	Reamer Upward Travel
Hold Ground "ON" - #4	Valve 11 "OFF"	Reamer On, Clamp Closed
Hold Ground "ON" - #4	Valve 11 "OFF"	Reamer at Top of Stroke
Ground "OFF" #4	Valve 4 "OFF"	Reamer Down Travel
Ground "OFF" #4	Valve 11 "ON"	Reamer "OFF", Clamp Open

SPRAY FUNCTION		
Torch in SPRAY Position	Valve #5 "ON"	Sprayer On
Torch Away	Valve #5 "OFF"	Sprayer Off

SCHEMATIC FOR RCS-1000 NOZZLE CLEANING STATION

CAUTION: THIS EQUIPMENT MUST BE LOCKED OUT DURING MAINTENANCE OR ANY OPERATOR ADJUSTMENT.



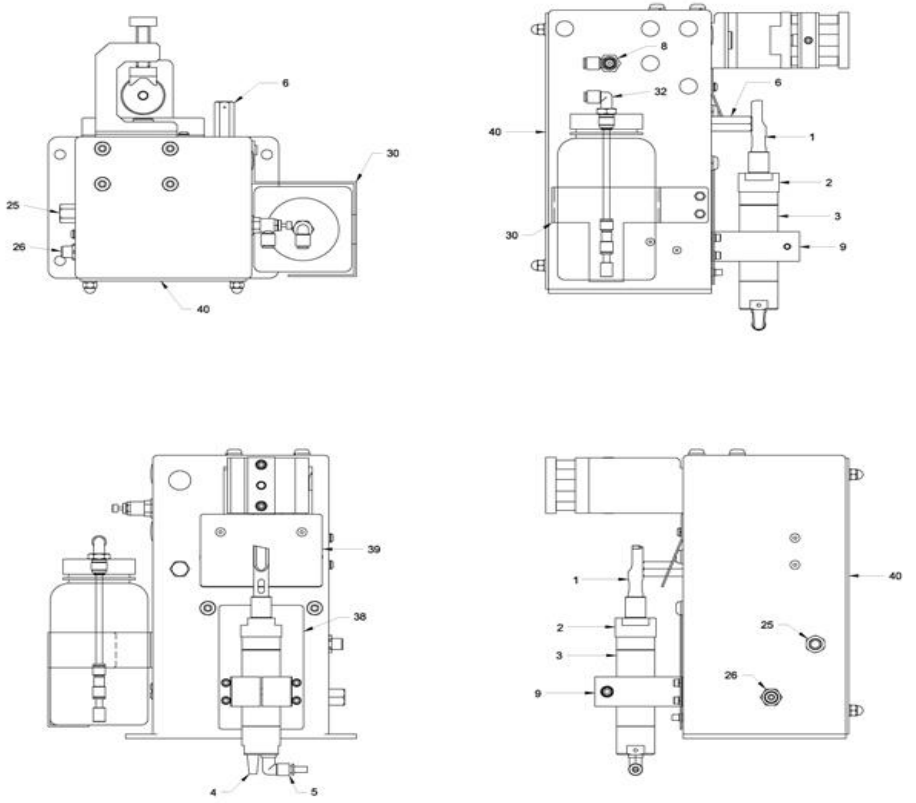
NOTE: WIRING SHOWN FOR STANDARD **"SOURCING"** LOGIC.

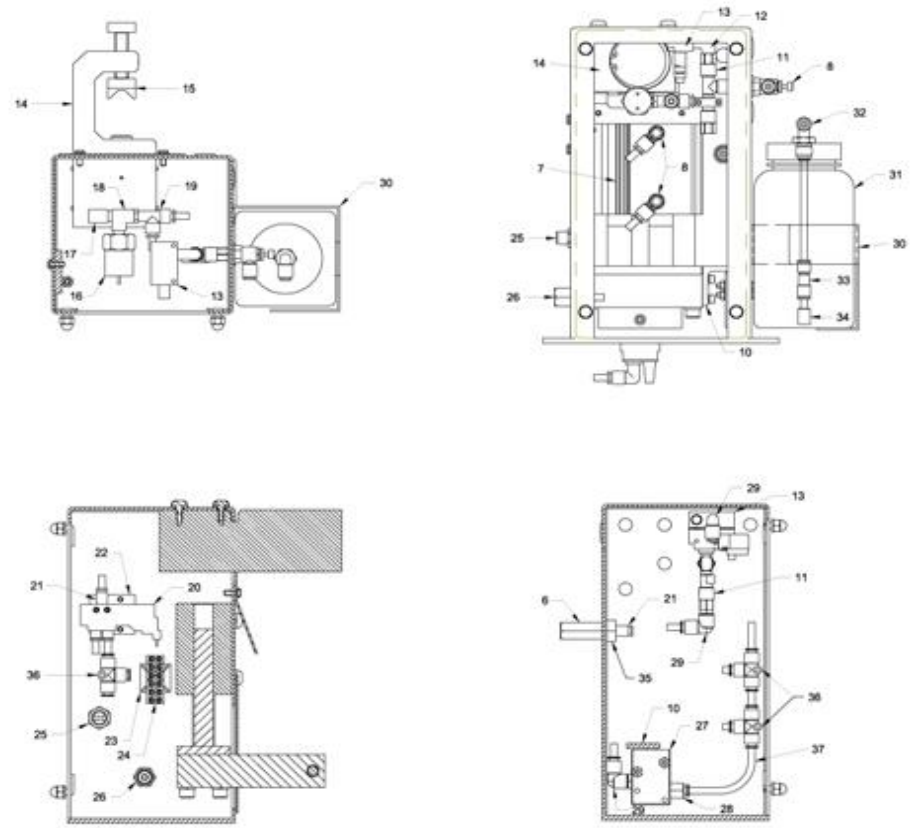
#	DESCRIPTION	#	DESCRIPTION
1	Lift Cylinder	9	Pressure Switch
2	Speed Control Valve – DOWN	10	Pneumatic Motor
3	Speed Control Valve – UP	11	Mechanical Valve
4	Solenoid Valve 24VDC - Cycle	12	Valve Bracket
5	Solenoid Valve 24VDC – Spray	13	Terminal Block
6	Venturi Valve	14	Plug
7	Spray Tip	15	Air Supply Lines
8	Clamp Block Assembly		

REAMER FUNCTION		
OPERATION SEQUENCE	**VALVE ACTION**	**CYCLE STATUS**
Ground "OFF" - #4	Valve 11 "ON"	Reamer Off, Clamp Open
Ground "ON" - #4	Valve 4 "ON"	Reamer Upward Travel
Hold Ground "ON" - #4	Valve 11 "OFF"	Reamer On, Clamp Closed
Hold Ground "ON" - #4	Valve 11 "OFF"	Reamer at Top of Stroke
Ground "OFF" #4	Valve 4 "OFF"	Reamer Down Travel
Ground "OFF" #4	Valve 11 "ON"	Reamer "OFF", Clamp Open

SPRAY FUNCTION		
Torch in SPRAY Position	Valve #5 "ON"	Sprayer On
Torch Away	Valve #5 "OFF"	Sprayer Off

PARTS LIST – RCS-1000





Item #	Part Number	Description
1	See Blade Chart	Reamer Blade
2	RS-100	Sprayer Tip
3	RS-101	Pneumatic Motor, Spray Thru
	RS-101NS	Pneumatic Motor, Non Spray Thru
4	RS-102	Motor Muffler
5	RS-103	Fitting, Elbow ¼" NPT x 1/4" Comp.
6	RS-104	Fitting, Elbow 1/8" NPT x 1/4" Comp.
7	RS-105	Lift Cylinder
8	RS-106	Fitting, Flow Control
9	RS-107	Motor Clamp Block
10	RS-108	Valve Actuating Bracket
11	RS-109	Venturi Valve
12	RS-110	Fitting, Elbow 1/8" NPT x 1/8" NPT
13	RS-111	Solenoid Valve, Spray
14	RS-112	Clamping Cylinder Assembly
15	RS-113	V-Block, Clamp Cylinder
16	RS-114	Pressure Switch
17	RS-115	90° Street Elbow, 1/8" NPT
18	RS-116	Street Tee, 1/8" NPT
19	RS-117	Fitting, Lateral Tee, 1/8" NPT
20	RS-118	Solenoid Valve, Main
21	RS-119	Fitting, Male, 10-32 x ¼" Push
22	RS-120	Valve Mounting Plate
23	RS-121	Terminal Block Holder
24	RS-122	Terminal Block
25	RS-123	Receptacle – 6-Pin
26	RS-124	Connector, ¼" NPT x ¼" Push
27	RS-125	Mechanical Valve
28	RS-126	Fitting, Male, 1/8" x ¼" Push
29	RS-127	Fitting, Elbow 1/8" NPT x ¼" Push
30	RS-128	Bottle Bracket
31	RS-129	Bottle – Anti-Spatter
32	RS-130	Elbow, ¼" Push x ¼" Push
33	RS-131	Unidirectional Valve
34	RS-132	Filter – Anti-Spatter
35	RS-133	Elbow, 1/8" NPT x ¼" Push
36	RS-134	Fitting, Union Tee ¼" Push
37	RS-135	Tubing ¼" OD
38	RS-136	Guard Plate
39	RS-137	Angled Guard Plate
40	RS-138	Rear Cover Plate

WC-1000 WIRE CUTTER

SPECIFICATIONS

Air Requirements – 80-120 PSI @ 5 S.C.F.M(Min) Clean Shop Air
Cutting Range – Up TO 1/8" (3.2mm)

DESCRIPTION

The WC-1000 Wire Cutter is designed to remove the ball end of the welding wire for consistent wire stick-out, providing smoother arc starts and where a desired stick out is required for touch sensing or other operations.

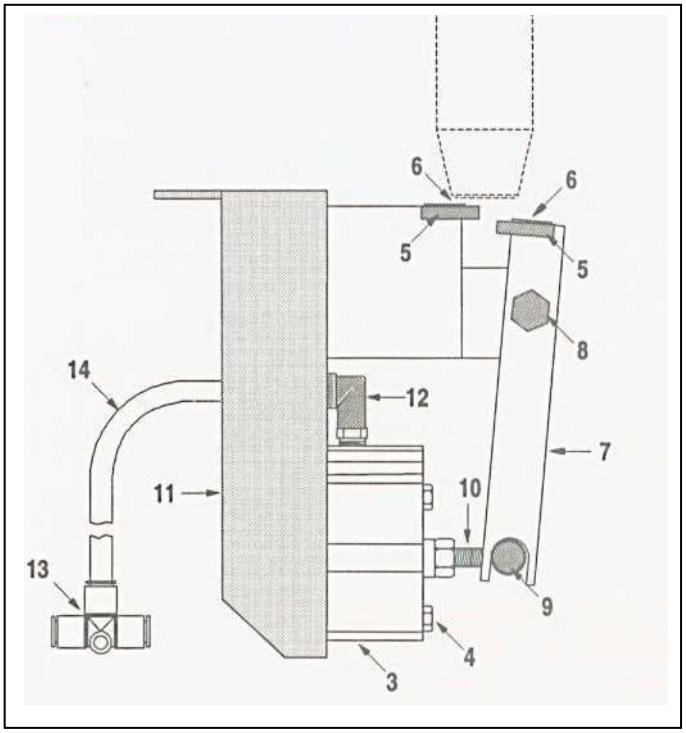
The WC-1000 can be easily mounted to a remote location or directly on the RCS-1000 Robotic Cleaning Station and can be used with all makes and models of robotic equipment.

INSTALLATION

1) Mount the WC-1000 directly to the RCS-1000 Robotic Nozzle Cleaning Station per the instructions.
2) Program the robot nozzle/welding wire to pass between the cutter blades
3) Program the robot to activate the ground "ON" Lead 4 for a cycle time of 0.5 Seconds. NOTE: This will activate the wire cutter cylinder to cut the wire without fully activating the RCS-1000 Nozzle Cleaning Station.

See Wiring Schematic on Page 2 for proper electrical connections.

PARTS LIST – WC-1000



Item #	Part Number	Description
1	WC-501	Activator Lever
2	WC-502	Activator Valve
3	WC-503	Cylinder
4	WC-504	Screw
5	WC-505	Cutter Blade
6	WC-506	Screw
7	WC-507	Arm
8	WC-508	Shoulder Bolt
9	WC-509	Pivot
10	WC-510	Stud w/Nut
11	WC-511	Bracket
12	WC-512	Male Elbow 1/4" NPT x 1/8" NPT
13	WC-513	Tee
14	WC-514	Tubing, ¼" OD

NOTES:

AMERICAN WELDQUIP

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